

628.	Leading End for St. Thrie Bm. Hwy. Guard at Bridge	Each
628.4	Trailing End for St. Thrie Bm. Hwy. Guard at Bridge	Each
144.	Class B Rock Excavation	Cubic Meter

SECTION 628**PERMANENT IMPACT ATTENUATORS****DESCRIPTION****628.20 General.**

This item shall consist of furnishing and installing impact attenuators in close conformance with the specifications of the manufacturer, and in close conformance with the locations, lines, and grades shown on the plans and/or designated in the Special Provisions.

MATERIALS**628.40 General.**

All materials used in the foundation and anchorage of the impact attenuator shall meet the requirements specified in Division III, Materials.

The impact attenuator may be any impact attenuator which meets the requirements of *National Cooperative Highway Research Program, Report 230* and its subsequent revisions, and has been accepted by the Federal Highway Administration in the location intended. Impact attenuators which have not been accepted by the Federal Highway Administration, or which have been designated as approved for experimental use by the Federal Highway Administration shall be rejected by the Engineer. The manufacturer must provide evidence of the suitability and acceptance by the Federal Highway Administration of the impact attenuator.

The impact attenuator shall be designed to fit within reasonably close tolerance of the dimensions given in the plans or the Special Provisions for a given location. The manufacturer shall design the impact attenuator for the design speed given on the plans or other such speed designated in the Special Provisions. Copies of the design shall be given to the Engineer for inclusion in the contract record. A listing of the parts shall also be given to the Engineer for future maintenance operations.

CONSTRUCTION METHODS**628.60 General.**

Excavation for attenuator foundations and anchorage shall be made to the required depth and to a width that will permit the installation and bracing of forms where necessary. All soft and unsuitable material shall be replaced with gravel borrow.

The impact attenuator shall be installed in accordance with the specifications and recommendations of the manufacturer. Copies of these specifications and recommendations shall be provided to the Engineer.

COMPENSATION**628.80 Method of Measurement.**

Impact attenuators will be measured as a single unit, each in place. There will be a separate bid item for each location.

628.81 Basis of Payment.

Impact attenuators will be paid for at the contract unit price for each location, which includes full compensation for all labor, equipment, materials, foundation and anchorage, and all incidental work necessary to complete the work as specified.

Gravel Borrow required for any foundation and anchorage work will be paid for at the contract unit price under Item 151, Gravel Borrow.

628.82 Payment Items.

628.31	Impact Attenuator for Shoulder, Incapable of Redirection	Each
628.32	Impact Attenuator for Shoulder, Capable of Redirection	Each
628.33	Impact Attenuator for Median, Incapable of Redirection	Each
628.34	Impact Attenuator for Median, Capable of Redirection	Each
151.	Gravel Borrow	Cubic Meter

SECTION 629

CONCRETE BARRIER

DESCRIPTION

629.20 General.

This item shall consist of furnishing and placing Portland cement concrete barrier on an accepted prepared subgrade or sub-base in accordance with these specifications and in reasonable close conformity with the lines, grades and dimensions shown on the plans.

MATERIALS

629.40 General.

Materials shall meet the requirements specified in the following Subsections of Division III, Materials:

Cement Concrete, 30 MPa - 20 mm - 390 kg	M4.02.00
Steel Reinforcement	M8.01.0
Epoxy Coated Reinforcing Bars	M8.01.7
Preformed Joint Filler	M9.14.0
Concrete Penetrant/Sealer	M9.15.0
Demountable Reflectorized Delineators	M9.30.7

CONSTRUCTION METHODS

629.60 General.

Concrete barriers shall be either precast or cast-in place and conform to Section M4 for 30 MPa - 20 mm - 390 kg Cement Concrete Masonry. Excavation for concrete barriers shall be made to the required depth and to a width that will permit the installation and bracing of forms where necessary. All soft and unsuitable material shall be removed and replaced with gravel borrow.

The subgrade shall be properly shaped and compacted as specified in Section 170.

The barrier shall be cured according to the relevant requirements of Subsection 476.71 and M4.02.14 as herein amended. If the water method is utilized, the units shall be kept moist for a period of seven days.

Under no condition will the use of a curing compound be permitted.

629.61 Precast Barrier.